



BOTTOM LINE RECOMMENDATIONS:

Procedural Pain

The average Canadian child admitted to hospital receives a mean of 6.3 painful procedures in 24 hours¹. Untreated pain has consequences. **Short-term consequences:** pain and distress for the child, parents and healthcare providers, prolonged procedure time and slower healing. **Long-term consequences:** increased sensitivity to pain, increased avoidance behavior, social hyper-vigilance and higher levels of anxiety before a painful procedure. Expedient and effective pain care improves procedure success rates, prevents the need for repeat attempts, improves emergency department flow and improves patient and caregiver satisfaction². Physical, pharmacologic and psychological interventions can be employed to minimize procedural pain for children.

GENERAL SUGGESTIONS TO MINIMIZE PAIN

PHYSICAL

- » **Ask the parents/caregivers** to stay in the room and provide them with direction to calmly support their child with distraction, gentle touch (if desired by the child), and soothing words (“I’m here for you,” “I love you”).
- » If available, **breastfeeding** through procedures (e.g. venipuncture, IV insertion) can be soothing for the child.
- » **Non-nutritive sucking** (e.g. pacifier) can be used if breastfeeding is not available.
- » Young infants can have **facilitated tucking or swaddling** with blankets to calm them during procedures.
- » If available, parents may provide **kangaroo care**, with skin-to-skin contact during preparation for procedures (e.g. venipuncture, IV insertion).
- » Parents may **hold** the child in a number of positions that do not interfere with procedures (e.g. upright and in direct physical contact with themselves), and **rock** the child after the procedure.

PROCEDURE-SPECIFIC SUGGESTIONS TO MINIMIZE PAIN

NEEDLESTICK PROCEDURES (EG - IV INSERTION, BLOOD WORK, VACCINES)

- » **Topical anesthetic creams** – Can be applied to all ages. Fast-acting creams (e.g. Maxilene®, Ametop®) are preferred over slow-acting ones (e.g. EMLA®). Apply 30 minutes prior to procedure for fast-acting creams/ 60 minutes for slow-acting creams. Application at triage is recommended.
- » **Oral sucrose** – Can be used up to 12 months of age. Works best for < 1 month of age. 2 mL of 24% glucose solution, 2 minutes before the initiation of the painful procedure. (If 24% glucose is unavailable, can dilute D50W with equal parts sterile water to create D25W as a substitute).
- » **Vapo-coolant spray** – Can be used for all ages. If topical anesthetic cream is unavailable, vapo-coolant spray (e.g. Pain-Ease®) may be used. Spray on the skin 5-10 seconds prior to the skin-puncturing procedure.

LACERATION REPAIR

- » **Topical anesthetic gel** – If >3 months of age, laceration may be covered with 1-3 ml of topical anesthetic gel [e.g. lidocaine-epinephrine-tetracaine (LET gel)], and covered with an occlusive bandage (e.g. Tegaderm®). Apply 30-45 minutes prior to repair. Application at triage is recommended.
- » **Tissue adhesives (e.g. Dermabond®, Glu-Stitch®)** – Can be used for all ages. Avoid eye area. Avoid areas of tension. Can reinforce glue with perpendicularly applied steri-strips.
- » **Absorbable sutures** – In areas of low tension (i.e. not joints), absorbable sutures should be used for all children.
- » **pH adjustment of injected lidocaine** – Buffering lidocaine decreases the pain of injection. Add 1 mL of 8.4% sodium bicarbonate to 9 mL of 1% or 2% lidocaine. **Maximal lidocaine dose: 4 mg/kg.**
- » **Minimize lidocaine injection pain** – Warm lidocaine to room temperature by rubbing vial between hands, use a 27-30 gauge needle and use slow injection.

NASOGASTRIC TUBE INSERTION

- » **Lidocaine Spray** – Can be used for all ages. Nebulized 4% lidocaine (3-5 ml) or atomized 4% lidocaine nasal spray (2 sprays) may be used 1-2 minutes prior to the procedure. Benzocaine spray may be used as well.
- » **Lidocaine Jelly** – Can be used for all ages. Lubricating the nasogastric tube with 1-2 ml of 1-2% lidocaine jelly may be beneficial in treating post-insertion pain caused by minor abrasions to the nasopharynx.

URETHRAL CATHETERIZATION

- » **Oral Sucrose** – Can be used up to 12 months of age. Works best for < 1 month of age. 2 mL of 24% glucose solution, 2 minutes before the initiation of the painful procedure. (If 24% glucose is unavailable, can dilute D50W with equal parts sterile water to create D25W as a substitute).
- » **Lidocaine Jelly** – Can be used for all ages. Limited evidence for benefit. Lubricating the catheter with 1-2 ml of 1-2% lidocaine jelly may be beneficial in treating post-insertion pain caused by minor abrasions to urethra.
- » **Non-pharmacologic methods** of minimizing pain are key due to limited evidence for pharmacotherapy.

LUMBAR PUNCTURE

- » **Topical anesthetic creams** – Can be applied for all ages. Fast-acting creams (e.g. Maxilene®, Ametop®) are preferred over slow-acting ones in the emergency setting. Apply 30 minutes prior to procedure for fast-acting creams/60 minutes for slow-acting creams.
- » **Injected Lidocaine** – Topical creams only numb the first few millimeters of the skin. **Maximal dose: 4 mg/kg.** Inject the deeper area for lumbar puncture needle insertion with up to 1 ml of 1-2% lidocaine.
- » **Oral Sucrose** – Can be used up to 12 months of age. Works best for children < 1 month of age. 2 mL of 24% glucose solution, 2 minutes before the initiation of the painful procedure. (If 24% glucose is unavailable, can dilute D50W with equal parts sterile water to create D25W as a substitute).

PSYCHOLOGICAL

- » **Simple distraction techniques** can include bubbles, books, I-spy books/cards, portable distraction kits, and simple conversation with the child.
- » **Technology-based distraction** can utilize devices brought in by the family, or kept within your emergency department: tablet device, DVD player, smart phone games, music, videos, virtual reality, etc.

SPECIAL CONSIDERATIONS FOR CHILDREN WITH DISABILITIES

- » Children with special needs (e.g. autism, global developmental delay, speech delay) may not perceive, report, or respond to pain treatment in a typical manner. Consider the following:
 - » **Ask the parents!** Parents and caregivers often know what works best for their child.
 - » Sensory considerations: low light, low noise and minimal staff in the room can help some children.
 - » In some circumstances (e.g. extreme agitation), you may need to perform procedural sedation and batch all the required procedures.

The purpose of this document is to provide healthcare professionals with key facts and recommendations for procedural pain management in children. This summary was produced by the pain content advisors for the TREKK Network, Dr. Samina Ali of the Stollery Children's Hospital and Dr. Amy Drendel of the Medical College of Wisconsin, and uses the best available knowledge at the time of publication. However, healthcare professionals should continue to use their own judgment and take into consideration context, resources and other relevant factors. The TREKK Network is not liable for any damages, claims, liabilities, costs or obligations arising from the use of this document including loss or damages arising from any claims made by a third party. The TREKK Network also assumes no responsibility or liability for changes made to this document without its consent. Key references for this summary include:

- 1) Stevens BJ, Abbott LK, Yamada J, Harrison D, Stinson J, Taddio A, Barwick M, Latimer M, Scott SD, Rashotte J, Campbell F, Finley GA; CIHR Team in Children's Pain. [Epidemiology and management of painful procedures in children in Canadian hospitals](#). CMAJ 2011; 183(7):E403-10.
- 2) Ali S, McGrath T, Drendel AL. [An Evidence-Based Approach to Minimizing Acute Procedural Pain in the Emergency Department and Beyond](#). Pediatr Emerg Care 2016;32(1):36-42.
- 3) Committee on Fetus and Newborn & Section on Anesthesiology and Pain Medicine. [Prevention and Management of Procedural Pain in the Neonate: An Update](#). Pediatrics 2016; 137(2):e20154271.
- 4) The Canadian Association of Paediatric Health Centres, Knowledge Exchange Network. [Acute Procedural Pain: Paediatric Recommendations and Implementation Toolkits](#). (Accessed online, August 2016).